



## Bowling for Density

Physical properties of matter are central to describing how different substances will behave in the real world. Will a large, solid object such as a bowling ball float or sink in tap water? It's your job to find out—but without placing the ball in water. What physical properties of a bowling ball would help determine whether it will float or sink? How could you measure those properties to obtain the data you need to do calculations to make a prediction of sink or float?

### Purpose

Design a procedure and collect data to calculate and predict whether your bowling ball will float or sink when placed in tap water. Do NOT place your bowling ball in water until you have designed, written, and carried out your procedure and shown your procedure, calculations, and prediction to your instructor.

Formulas and information you may need include:

1 pound = 454 grams	$D = M/V$
$C = 2\pi r$	$V = 4/3\pi r^3$
Density of water at 25°C = 1 g/mL	

### Materials

Bowling ball, measuring tools, calculator, graduated cylinder, pipet

### Instructions

- 1) Write out your procedure with enough detail so that someone else could accurately repeat your experiment without any other information from you.
- 2) Set up a data table or other suitable organizational system for your experimental data.
- 3) Follow your procedure and collect data as specified.
- 4) Make any necessary calculations and record your results.
- 5) Based on your calculations, predict whether the ball will float or sink in tap water.
- 6) Write a hypothesis for your experiment. Remember that a hypothesis should include an explanation, not just a prediction.
- 7) Show your teacher your hypothesis.
- 8) When given approval, test your hypothesis.

HYPOTHESIS:

